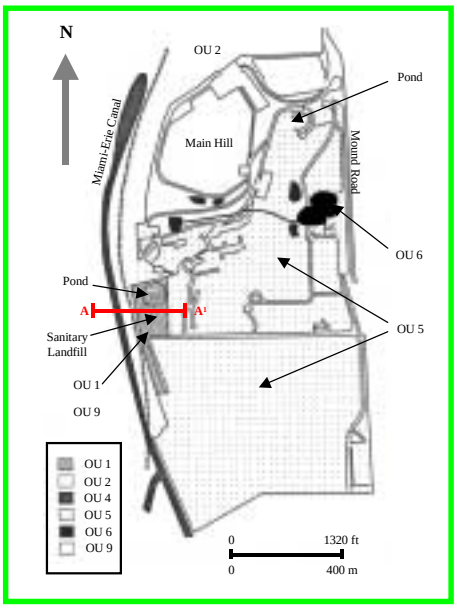
Vadose Zone Fact Sheet
Mound Plant

Background: The Mound Plant is located in Miamisburg, Ohio, approximately 16 km (10 mi) south-southwest of Dayton, Ohio. Most of the 765-hectare (306-acre) site overlooks the city from a ridge that extends toward downtown Miamisburg from the southern city limits. Mound Road, on the east side of the plant, is lined by residences and provides access to the plant's main gate. Mound's early mission included nuclear materials research. Later missions included process development, production engineering, manufacturing and surveillance of detonators, explosive timers, transducers, firing sets, explosive pellets, components, and specific test equipment. Additional manufacturing activities at Mound included recovering and purifying tritium.



Issues: Ground water contamination and remediation is the major concern at Mound. While not exceeding established regulatory limits, tetrachloromethane is present at risk-based levels of concern in the vadose zone.

Vadose zone infiltration: The estimated infiltration to the aquifer via precipitation is 15 cm (6 in) per year. Surface waters provide additional vadose zone infiltration.

Vadose zone characterization/remediation: The only discernable pattern for vadose zone contamination that has been detected via sampling appears directly related to activities in and around the site sanitary landfill. A single major source of contamination has not been detected and is not believed to exist.

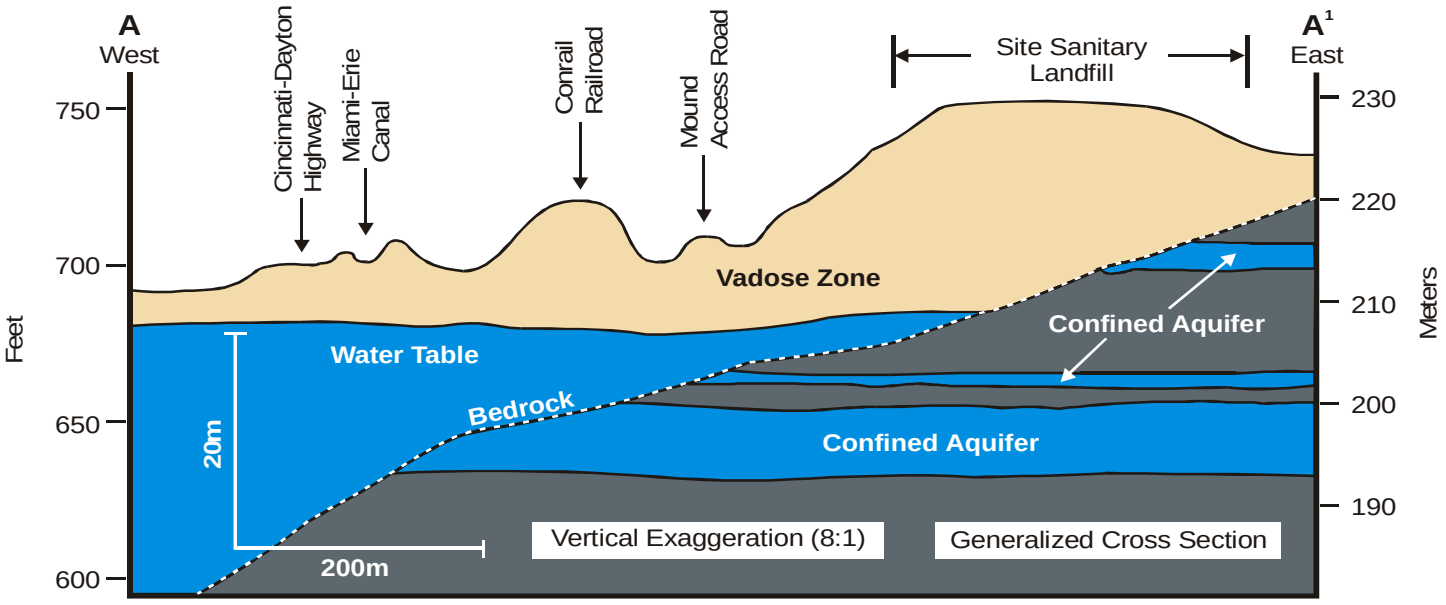
Precipitation: The average rainfall is 97 cm (38 in) per year.

Surface waters: Surface water features include drainage ditches, french drains, and an overflow pond. The Great Miami River is located just west of the Mound Plant boundary.

Geology: Extensive construction has introduced large quantities of fill material and significantly modified the surface topography. Portions of the site are overlain by a constructed, lined landfill. Relatively thick deposits of glacial till underlie fill materials and overlie steep westward sloping bedrock. The contaminated vadose zone soil above the aquifer consists of lenses of glacial till, artificial fill, sand, and gravel. Bedrock is predominantly limestone and shale.

Vadose zone thickness: The vadose zone in the area of ground water contamination generally ranges in thickness from 8 to 21 m (25 to 70 ft).

Major contaminants of concern: Tritium, perchloroethylene (PCE), trichloroethylene (TCE), dichloroethylene (DCE), and low levels of vinyl chloride.



September 2000

Ground Water Fact Sheet
Mound Plant

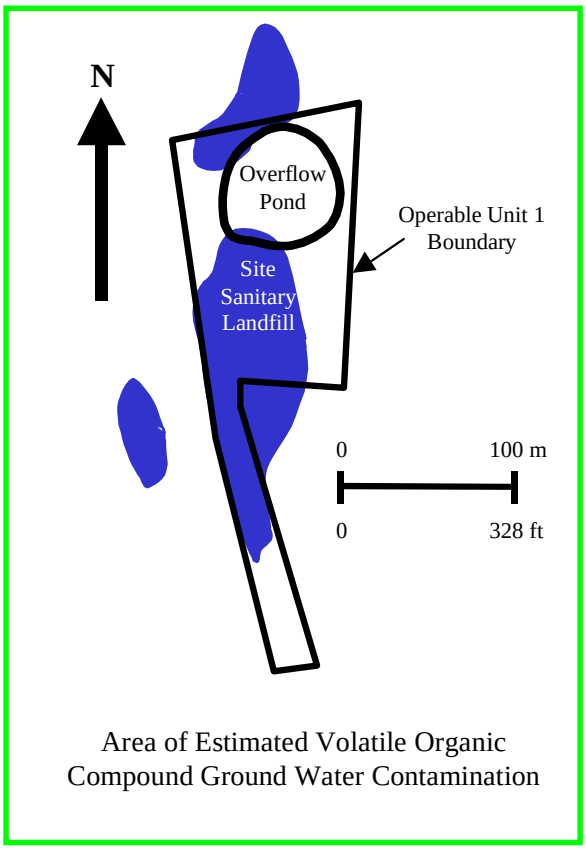
Background: The Mound Plant is located in Miamisburg, Ohio, approximately 16 km (10 mi) south-southwest of Dayton, Ohio. Most of the 765-hectare (306-acre) site overlooks the city from a ridge that extends toward downtown Miamisburg from the southern city limits. Mound Road, on the east side of the plant, is lined by residences and provides access to the plant's main gate. Mound's early mission included nuclear materials research. Later missions included process development, production engineering, manufacturing and surveillance of detonators, explosive timers, transducers, firing sets, explosive pellets, components, and specific test equipment. Additional manufacturing activities at Mound included recovering and purifying tritium.

Hydrogeology: The contaminated ground water occurs in the shallow, high permeability, sandy-gravel Buried Valley Aquifer (BVA), a sole source aquifer that provides drinking water for many cities along the Miami River and for the plant. Variable thickness confined bedrock aquifers are present in moderately permeable limestone that are bounded by low permeability shale. The bedrock aquifers may be locally higher or adjacent to the BVA, but the ground water flow is from these bedrock aquifers to the BVA. There is minimal to no vadose zone recharge to the bedrock aquifers. In general, ground water flow is to the west or southwest. Ground water extraction wells in the BVA locally influences flow directions.

Issues: The Buried Valley Aquifer provides drinking water for many cities along the Miami River and for the plant.

Ground water characterization/remediation: Characterization has been completed and a Record of Decision for ground water remediation was issued in 1995. The function of the remedial action is to control ground water contamination, to prevent migration of contamination toward the Mound Plant production wells, and to minimize exposures to potential receptors. The major components of the selected remedy include ground water extraction; treatment using cascade oxidation, ultraviolet oxidation, conventional air stripping, or other suitable treatment systems; and discharge of the treated ground water to the Great Miami River through the existing NPDES (National Pollution Discharge Elimination System) outfall or a new outfall. Two new technologies are being evaluated to expedite ground water remediation: air sparging and soil vapor extraction.

Ground water use: Residential, agricultural, and industrial.



Area of Estimated Volatile Organic Compound Ground Water Contamination

Major Contaminant	Depth	Remedial Approach
Perchloroethylene (PCE)	8 m (25 ft)	Pump & treat